AMENDED CLAIMS

[received by the International Bureau on 26 September 2005 (26.09.05)
original claim 1-11, 14,17, 26 –28, 31 – 39, and 43-45 are amended;
original claim 43 cancelled and renumbered (12 pages)]

What is claimed as being new and desired to be protected by Letters Patent of the United States is as follows:

1. A water production system for efficiently making potable water in an environment of humid air comprising:

a.at least one heat exchanger in which a cooling fluid is drawn through internally by a negative pressure siphon,

(1)said at least one heat exchanger being disposed in a path of the humid air so that the humid air flows externally on the at least one heat exchanger to condense water vapor from the humid air and produce potable water;

b.means for controlling the volume of the cooling fluid passing through the at least one heat exchanger in response to an amount of heat absorbed by the at least one heat exchanger in the process of condensing water vapor from the humid air; and

c.means for enhancing the rate of at which water vapor is condensed from the humid air.

2.The water production system of claim 1, further comprising a treatment system for the potable water.

3.The water production system of claim 2, wherein the treatment system comprises at least one of a filter and a chemical treatment system.

4.The water production system of claim 1, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air comprises means for enhancing the specific humidity of the humid air.

5.The water production system of claim 1, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air comprises means for increasing the ambient pressure of the humid air in the path that flows externally on the at least one heat exchanger.

6.The water production system of claim 5, wherein the means for increasing the ambient pressure of the humid air in the path that flows externally on the at least one heat exchanger includes a partially open structure disposed above the at least one heat exchanger and at least one fan for creating a positive air pressure of the humid air in the partially open structure.

7.The water production system of claim 6, wherein the partially open structure comprises a flexible dome system having a sheeting cover supported bulgingly by said positive air pressure and means for anchoring the sheeting cover,

whereby, the positive air pressure within the dome system can be enhanced to increase the condensation rate and air borne water contaminants can be reduced within the dome system.

8.The water production system of claim 7, wherein the flexible dome system is independent of contact with the at least one heat exchanger.

9.The water production system of claim 6, wherein the at least one fan comprises a ducted fan humidifier for adding moisture to and increasing the pressure of the humid air entering the partially open structure,

whereby, the humidity levels within the partially open structure can be enhanced to increase the condensation rate.

10.The water production system of claim 6, wherein the at least one fan comprises a ducted fan humidifier.

11.The water production system of claim 6, wherein the at least one fan further comprises at least one air discharge fan for removing air that has flowed externally on the at least one heat exchanger and for balancing the positive air pressure in the partially open structure.

12.The water production system of claim 1, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air comprises means for vibrating the heat exchanger to break the surface tension of and release the condensed water on an external surface of the at least one heat exchanger.

13.The water production system of claim 1, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air comprises at least one continuous coil that is disposed in the flow of humid air to condense additional potable water from the humid air, each of said at least one continuous coil having an internal passageway extending throughout the length of the coil in which a coolant flows from one end of the coil to the other,

said coolant being one of the cooling fluid prior to entering the heat exchanger and the cooling fluid discharging from the heat exchanger.

14. The water production system of claim 13, wherein the coolant is drawn through the at least one continuous coil by a negative pressure siphon.

15. The water production system of claim 13, wherein each of the at least one continuous coil is loosely looped over a coil support structure.

16. The water production system of claim 13, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air further comprises means for periodically moving at least one of the at least one continuous coil to break the surface tension of and release the condensed water on an external surface of the at least one continuous coil.

17. The water production system of claim 1, wherein the means for controlling the volume of the cooling fluid passing through the at least one heat exchanger is in response to the temperature of the cooling fluid discharging from the heat exchanger.

18. The water production system of claim 1, wherein:

a. the means for controlling the volume of the cooling fluid passing through the at least one heat exchanger comprises:

(1) at least one inlet reservoir open to the environment for receiving the cooling fluid,

(a)said at least one inlet reservoir comprises at least one float valve for maintaining a volume of cooling water in said inlet reservoir at a predetermined inlet upper level;

(2)at least one outlet reservoir open to the environment for receiving the cooling fluid discharged from the heat exchanger,

(a)said at least one outlet reservoir comprises a controller for controlling an outlet upper level that is below the inlet upper level; and

b.the at least one heat exchanger has a cooling fluid circuit extending from the inlet reservoir through the heat exchanger to the outlet reservoir,

(1)the inlet end of the cooling fluid circuit is disposed below the inlet upper level, and

(2)the outlet end of the cooling fluid circuit is disposed below the outlet upper level,

whereby, a regulated flow of cooling fluid is siphoned through the cooling fluid circuit by a vacuum created when the controller lowers the outlet upper level in the outlet reservoir in response to the temperature of the cooling fluid at the outlet end of the water circuit.

19.The water production system of claim 18, wherein a portion of the cooling fluid circuit extending between the inlet end and the outlet end is disposed slightly higher in elevation than the inlet upper level of the inlet reservoir.

20.The water production system of claim 18, wherein a portion of the cooling fluid circuit extending between the inlet end and the outlet end is disposed slightly higher in

elevation than an upper rim of both the at least one inlet reservoir and the at least one outlet reservoir.

21. The water production system of claim 18, wherein the controller is responsive to the temperature of the cooling fluid in the outlet reservoir and independent of the temperature of the cooling fluid in the inlet reservoir.

22. The water production system of claim 18, wherein the controller is responsive to the temperature of the cooling fluid being released from the outlet reservoir.

23. The water production system of claim 18, wherein the controller is responsive to the difference in the temperature of the cooling fluid in the inlet reservoir and the temperature of the cooling fluid in the outlet reservoir.

24. The water production system of claim 18, wherein the controller comprises a moveable weir operably connected that is responsive to the temperature of the cooling fluid in the outlet reservoir.

25. The water production system of claim 18, wherein the controller comprises an actuated valve, for regulating the release of cooling fluid from the outlet reservoir and adjusting the outlet upper level, operably connected that is responsive to the temperature of the cooling fluid in the outlet reservoir.

26.The water production system of claim 1, wherein the cooling fluid is deep ocean water.

27.The water production system of claim 1, wherein each of the at least one heat exchanger comprises a heat exchanger support structure to support said at least one heat exchanger at a predetermined height above grade.

28.The water production system of claim 27, wherein the heat exchanger support structure comprises a drip collector for collecting potable water.

29.The water production system of claim 27, further comprising a water wheel disposed in the path of the cooling water that discharges from one of the at least one heat exchanger and the outlet reservoir for transporting the potable water from the drip collector into a storage tank.

30.The water production system of claim 1, further comprising a water wheel disposed in the path of the cooling water that discharges from the at least one heat exchanger that powers the potable water into a storage tank.

31.A water production system for efficiently making potable water in an environment of humid air comprising:

a.at least one heat exchanger in which a cooling fluid is drawn through internally by a negative pressure siphon,

(1)said at least one heat exchanger being disposed in a path of the humid air so that the humid air flows externally on the at least one heat exchanger to condense water vapor from the humid air and produce potable water;

b.means for controlling the volume of the cooling fluid passing through the at least one heat exchanger in response to an amount of heat absorbed by the at least one heat exchanger in the process of condensing water vapor from the humid air;

c.means for enhancing the rate of at which water vapor is condensed from the humid air enhancing the specific humidity of the humid air by increasing the ambient pressure of the humid air in the path that flows externally on the at least one heat exchanger including at least one fan for creating a positive air pressure of the humid air,

whereby, the positive air pressure can be enhanced to increase the condensation rate.

32.The water production system of claim 31, wherein the means for enhancing includes a partially open structure disposed above the at least one heat exchanger,

(1)said partially open structure comprising a flexible dome system having a sheeting cover supported bulgingly by said positive air pressure and means for anchoring the sheeting cover, and

(2)the at least one fan creates the positive air pressure of the humid air in the partially open structure,

whereby, the positive air pressure within the dome system can be enhanced to increase the condensation rate and air borne water contaminants can be reduced within the dome system.

33.The water production system of claim 31, wherein the flexible dome system is independent of contact with the at least one heat exchanger.

34.The water production system of claim 31, wherein the at least one fan comprises a ducted fan humidifier for adding moisture to and increasing the pressure of the humid air entering the dome system,

whereby, the humidity levels within the dome system can be enhanced to increase the condensation rate.

35.The water production system of claim 31, wherein the at least one fan further comprises at least one air discharge fan for removing air that has flowed externally on the at least one heat exchanger and for balancing the positive air pressure in the partially open structure.

36.A water production system for efficiently making potable water in an environment of humid air comprising:

a.a plurality of heat exchangers in which a cooling fluid is drawn through internally by a negative pressure siphon,

(1)each of said plurality of heat exchangers being disposed in a path of the humid air so that the humid air flows externally on the heat exchanger to condense water vapor from the humid air and produce potable water;

b.means for controlling the volume of the cooling fluid passing through the said plurality of heat exchangers in response to an amount of heat absorbed by the said plurality of heat exchangers in the process of condensing water vapor from the humid air; and

c.means for enhancing the rate of at which water vapor is condensed from the humid air.

37.The water production system of claim 36, wherein:

a.each of the plurality of heat exchangers is elongated, disposed in a parallel relationship to one another, and said plurality of heat exchangers are disposed laterally; and

b.the means for controlling the volume of the cooling fluid passing through the said plurality of heat exchangers interconnects the cooling fluid discharged from each of said plurality of heat exchangers.

38.A water production system for efficiently making potable water in an environment of humid air comprising:

a.at least one heat exchanger in which a cooling fluid flows through internally by a negative pressure siphon,

(1)said at least one heat exchanger being disposed in a path of the humid air so that the humid air flows externally on the at least one heat exchanger to condense water vapor from the humid air and produce potable water;

b.means for controlling the volume of the cooling fluid passing through the at least one heat exchanger in response to an amount of heat absorbed by the at least one heat exchanger in the process of condensing water vapor from the humid air; and

c.means for enhancing the rate of at which water vapor is condensed from the humid air including increasing the ambient pressure of the humid air in the path that flows

externally on the at least one heat exchanger with a partially open structure disposed above the at least one heat exchanger and at least one fan for creating a positive air pressure of the humid air in the partially open structure.

39.The water production system of claim 38, wherein the at least one fan comprises a ducted fan humidifier for adding moisture to and increasing the pressure of the humid air entering the dome system,

whereby, the humidity levels within the dome system can be enhanced to increase the condensation rate.

40.The water production system of claim 38, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air further comprises means for vibrating the heat exchanger to break the surface tension of and release the condensed water on an external surface of the at least one heat exchanger.

41.The water production system of claim 38, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air comprises at least one continuous coil that is disposed in the flow of humid air to condense additional potable water from the humid air, each of said at least one continuous coil having an internal passageway extending throughout the length of the coil in which a coolant flows from one end of the coil to the other,

said coolant being one of the cooling fluid before entering the heat exchanger and the cooling fluid discharging from the heat exchanger.

42.The water production system of claim 41, wherein the means for enhancing the rate of at which water vapor is condensed from the humid air further comprises means for periodically moving at least one of the at least one continuous coil to break the surface tension of and release the condensed water on an external surface of the at least one continuous coil.

43.The water production system of claim 1, further wherein the means for enhancing the rate of at which water vapor is condensed from the humid air further comprises at least one open sea water reservoir disposed under the dome to enhance humidity.

44.The water production system of claim 1, further wherein the cooling water is a refrigerant and further comprising a deep ocean water heat exchanger for re-cooling the refrigerant exiting from the heat exchanger, said deep ocean water heat exchanger having a cold deep ocean water supply which can be returned to the ocean after use and the refrigerant discharging from the deep ocean water heat exchanger can be reused in the water production system cycle.